FIG.1A

```
GGCACGAGGCTTCTGGCCAGGGAACGTGGAAGGCGCACCGACAGGGATCCGGCCAGGGAG  60

GGCGAGTGAAAGAAGGAAATCAGAAAGGAAGGGAGTTAACAAAATAATAAAAACAGCCTG 120

AGCCACGGCTGGAGAGACCGAGACCCGGCGCAAGAGAGCGCAGCCTTAGTAGGAGAGGAA 180

CGCGAGACGCGGCAGCGCAGAGCGCGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGC 240

AGGCGCCGCAGCTGAGACCGGCGGCCGACGGCCAGCCCTCAGGGGGCGGTCACAAGTCAG 300

CGCCCAAGCAAGTCAAGCGACAGCGCTCGTCTTCGCCCGAACTGATGCGCTGCAAACGCC 360
                                              M  R  C  K  R  R  6

GGCTCAACTTCAGCGGCTTTGGCTACAGCCTGCCGCAGCAGCAGCCGGCCGCCGTGGCGC 420
  L  N  F  S  G  F  G  Y  S  L  P  Q  Q  Q  P  A  A  V  A  R 26
```

# FIG.1B

```
GCCGCAACGAGCGCGAGCGCAACCGCGTCAAGTTGGTCAACCTGGGCTTTGCCACCCTTC 480
  R  N  E  R  E  R  N  R  V  K  L  V  N  L  G  F  A  T  L  R  46
GGGAGCACGTCCCCAACGGCGCGGCCAACAAGAAGATGAGTAAGGTGGAGACACTGCGCT 540
  E  H  V  P  N  G  A  A  N  K  K  M  S  K  V  E  T  L  R  S  66
CGGCGGTCGAGTACATCCGCGCGCTGCAGCAGCTGCTGGACGAGCATGACGCGGTGAGCG 600
  A  V  E  Y  I  R  A  L  Q  Q  L  L  D  E  H  D  A  V  S  A  86
CCGCCTTCCAGGCAGGCGTCCTGTCGCCCACCATCTCCCCCAACTACTCCAACGACTTGA 660
  A  F  Q  A  G  V  L  S  P  T  I  S  P  N  Y  S  N  D  L  N  106
ACTCCATGGCCGGCTCGCCGGTCTCATCCTACTCGTCGGACGAGGGCTCTTACGACCCGC 720
  S  M  A  G  S  P  V  S  S  Y  S  S  D  E  G  S  Y  D  P  L  126
TCAGCCCCGAGGAGCAGGAGCTTCTCGACTTCACCAACTGGTTCTGAGGGGCTCGGCCTG 780
  S  P  E  E  Q  E  L  L  D  F  T  N  W  F  *                 140
GTCAGGCCCTGGTGCGAATGGACTTTGGAAGCAGGGTGATCGCACAACCTGCATCTTTAG 840

TGCTTTCTTGTCAGTGGCGTTGGGAGGGGGAGAAAAGGAAAAGAAAAAAAAAGAAGAAGA 900
```

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# FIG.1C

AGAAGAAAAGAGAAGAAGAAAAAAACGAAAACAGTCAACCAACCCCATCGCCAACTAAGC 960

GAGGCATGCCTGAGAGACATGGCTTTCAGAAAACGGGAAGCGCTCAGAACAGTATCTTTG 1020

CACTCCAATCATTCACGGAGATATGAAGAGCAACTGGGACCTGAGTCAATGCGCAAAATG 1080

CAGCTTGTGTGCAAAAGCAGTGGGCTCCTGGCAGAAGGGAGCAGCACACGCGTTATAGTA 1140

ACTCCCATCACCTCTAACACGCACAGCTGAAAGTTCTTGCTCGGGTCCCTTCACCTCCCC 1200

GCCCTTTCTTAGAGTGCAGTTCTTAGCCCTCTAGAAACGAGTTGGTGTCTTTCGTCTCAG 1260

TAGCCCCCACCCCAATAAGCTGTAGACATTGGTTTACAGTGAAACTATGCTATTCTCAGC 1320

CCTTTGAAACTCTGCTTCTCCTCCAGGGCCCGATTCCCAAACCCCATGGCTTCCCTCACA 1380

FIG.1D

CTGTCTTTTCTACCATTTTCATTATAGAATGCTTCCAATCTTTTGTGAATTTTTTATTAT 1440

AAAAAATCTATTTGTATCTATCCTAACCAGTTCGGGGATATATTAAGATATTTTTGTACA 1500

TAAGAGAGAAAGAGAGAGAAAAATTTATAGAAGTTTTGTACAAATGGTTTAAAATGTGTA 1560

TATCTTGATACTTTAACATGTAATGCTATTACCTCTGCATATTTTAGATGTGTAGTTCAC 1620

CTTACAACTGCAATTTTCCCTATGTGGTTTTGTAAAGAACTCTCCTCATAGGTGAGATCA 1680

AGAGGCCACCAGTTGTACTTCAGCACCAATGTGTCTTACTTTATAGAAATGTTGTTAATG 1740

TATTAATGATGTTATTAAATACTGTTCAAGAAGAACAAAGTTTATGCAGCTACTGTCCAA 1800

ACTCAAAGTGGCAGCCAGTTGGTTTTGATAGGTTGCCTTTTGGAGATTTCTATTACTGCC 1860

FIG.1E

TTTTTTTTCTTACTGTTTTATTACAAACTTACAAAAATATGTATAACCCTGTTTTATACA 1920

AACTAGTTTCGTAATAAAACTTTTTCCTTTTTTTTAAAATG 1960

FIG.2A

GGCACGAGGCTTCTGGCCAGGGAACGTGGAAGGCGCACCGACAGGGATCCGGCCAGGGAG 60

GGCGAGTGAAAGAAGGAAATCAGAAAGGAAGGGAGTTAACAAAATAATAAAAACAGCCTG 120

AGCCACGGCTGGAGAGACCGAGACCCGGCGCAAGAGAGCGCAGCCTTAGTAGGAGAGGAA 180

CGCGAGACGCGGCAGAGCGCGTTCAGCACTGACTTTTGCTGCTGCTTCTGCTTTTTTTTT 240

TCTTAGAAACAAGAAGGCGCCAGCGGCAGCCTCACACGCGAGCGCCACGCGAGGCTCCCG 300

AAGCCAACCCGCGAAGGGAGGAGGGGAGGGAGGAGGAGGCGGCGTGCAGGGAGGAGAAAA 360

AGCATTTTCACTTTTTTTGCTCCCACTCTAAGAAGTCTCCCGGGGATTTTGTATATATTT 420

TTTAACTTCCGTCAGGGCTCCCGCTTCATATTTCCTTTTCTTTCCCTCTCTGTTCCTGCA 480

# FIG.2B

```
CCCAAGTTGGTCAACCTGGGCTTTGCCACCCTTCGGGAGCACGTCCCCAACGGCGCGGCC 540

AACAAGAAGATGAGTAAGGTGGAGACACTGCGCTCGGCGGTCGAGTACATCCGCGCGCTG 600
         M  S  K  V  E  T  L  R  S  A  V  E  Y  I  R  A  L   17
CAGCAGCTGCTGGACGAGCATGACGCGGTGAGCGCCGCCTTCCAGGCAGGCGTCCTGTCG 660
Q  Q  L  L  D  E  H  D  A  V  S  A  A  F  Q  A  G  V  L  S   37
CCCACCATCTCCCCCAACTACTCCAACGACTTGAACTCCATGGCCGGCTCGCCGGTCTCA 720
P  T  I  S  P  N  Y  S  N  D  L  N  S  M  A  G  S  P  V  S   57
TCCTACTCGTCGGACGAGGGCTCTTACGACCCGCTCAGCCCCGAGGAGCAGGAGCTTCTC 780
S  Y  S  S  D  E  G  S  Y  D  P  L  S  P  E  E  Q  E  L  L   77
GACTTCACCAACTGGTTCTGAGGGGCTCGGCCTGGTCAGGCCCTGGTGCGAATGGACTTT 840
D  F  T  N  W  F  *                                           83
GGAAGCAGGGTGATCGCACAACCTGCATCTTTAGTGCTTTCTTGTCAGTGGCGTTGGGAG 900

GGGGAGAAAAGGAAAAGAAAAAAAAAGAAGAAGAAGAAAAGAGAAGAAGAAAAAAAC 960
```

# FIG.2C

GAAAACAGTCAACCAACCCCATCGCCAACTAAGCGAGGCATGCCTGAGAGACATGGCTTT 1020

CAGAAAACGGGAAGCGCTCAGAACAGTATCTTTGCACTCCAATCATTCACGGAGATATGA 1080

AGAGCAACTGGGACCTGAGTCAATGCGCAAAATGCAGCTTGTGTGCAAAAGCAGTGGGCT 1140

CCTGGCAGAAGGGAGCAGCACACGCGTTATAGTAACTCCCATCACCTCTAACACGCACAG 1200

CTGAAAGTTCTTGCTCGGGTCCCTTCACCTCCCCGCCCTTTCTTAGAGTGCAGTTCTTAG 1260

CCCTCTAGAAACGAGTTGGTGTCTTTCGTCTCAGTAGCCCCCACCCCAATAAGCTGTAGA 1320

CATTGGTTTACAGTGAAACTATGCTATTCTCAGCCCTTTGAAACTCTGCTTCTCCTCCAG 1380

GGCCCGATTCCCAAACCCCATGGCTTCCCTCACACTGTCTTTTCTACCATTTTCATTATA 1440

FIG.2D

GAATGCTTCCAATCTTTTGTGAATTTTTTATTATAAAAAATCTATTTGTATCTATCCTAA 1500

CCAGTTCGGGGATATATTAAGATATTTTTGTACATAAGAGAGAAAGAGAGAGAAAAATTT 1560

ATAGAAGTTTTGTACAAATGGTTTAAAATGTGTATATCTTGATACTTTAACATGTAATGC 1620

TATTACCTCTGCATATTTTAGATGTGTAGTTCACCTTACAACTGCAATTTTCCCTATGTG 1680

GTTTTGTAAAGAACTCTCCTCATAGGTGAGATCAAGAGGCCACCAGTTGTACTTCAGCAC 1740

CAATGTGTCTTACTTTATAGAAATGTTGTTAATGTATTAATGATGTTATTAAATACTGTT 1800

CAAGAAGAACAAAGTTTATGCAGCTACTGTCCAAACTCAAAGTGGCAGCCAGTTGGTTTT 1860

GATAGGTTGCCTTTTGGAGATTTCTATTACTGCCTTTTTTTTTCTTACTGTTTTATTACAA 1920

# FIG.2E

ACTTACAAAAATATGTATAACCCTGTTTTATACAAACTAGTTTCGTAATAAAACTTTTTC 1980

CTTTTTTTAAAATG 1994

FIG.3A

GGCACGAGGCTTCTGGCCAGGGAACGTGGAAGGCGCACCGACAGGGATCCGGCCAGGGAG 60

GGCGAGTGAAAGAAGGAAATCAGAAAGGAAGGGAGTTAACAAAATAATAAAAACAGCCTG 120

AGCCACGGCTGGAGAGACCGAGACCCGGCGCAAGAGAGCGCAGCCTTAGTAGGAGAGGAA 180

CGCGAGACGCGGCAGAGCGCGTTCAGCACTGACTTTTGCTGCTGCTTCTGCTTTTTTTTT 240

TCTTAGAAACAAGAAGGCGCCAGCGGCAGCCTCACACGCGAGCGCCACGCGAGGCTCCCG 300

AAGCCAACCCGCGAAGGGAGGAGGGGAGGGAGGAGGAGGCGGCGTGCAGGGAGGAGAAAA 360

AGCATTTTCACTTTTTTTGCTCCCACTCTAAGAAGTCTCCCGGGGATTTTGTATATATTT 420

TTTAACTTCCGTCAGGGCTCCCGCTTCATATTTCCTTTTCTTTCCCTCTCTGTTCCTGCA 480

# FIG.3B

```
CCCAAGTTCTCTCTGTGTCCCCCTCGCGGGCCCCGCACCTCGCGTCCCGGATCGCTCTGA 540

TTCCGCGACTCCTTGGCCGCCGCTGCGCATGGAAAGCTCTGCCAAGATGGAGAGCGGCGG 600
                                M  E  S  S  A  K  M  E  S  G  G  11
CGCCGGCCAGCAGCCCCAGCCGCAGCCCCAGCAGCCCTTCCTGCCGCCCGCAGCCTGTTT 660
 A  G  Q  Q  P  Q  P  Q  P  Q  Q  P  F  L  P  P  A  A  C  F  31
CTTTGCCACGGCCGCAGCCGCGGCGGCCGCAGCCGCCGCAGCGGCAGCGCAGAGCGCGCA 720
 F  A  T  A  A  A  A  A  A  A  A  A  A  A  A  Q  S  A  Q  51
GCAGCAGCAGCAGCAGCAGCAGCAGCAGCAGGCGCCGCAGCTGAGACCGGCGGCCGA 780
 Q  Q  Q  Q  Q  Q  Q  Q  Q  Q  Q  A  P  Q  L  R  P  A  A  D  71
CGGCCAGCCCTCAGGGGGCGGTCACAAGTCAGCGCCCAAGCAAGTCAAGCGACAGCGCTC 840
 G  Q  P  S  G  G  G  H  K  S  A  P  K  Q  V  K  R  Q  R  S  91
GTCTTCGCCCGAACTGATGCGCTGCAAACGCCGGCTCAACTTCAGCGGCTTTGGCTACAG 900
 S  S  P  E  L  M  R  C  K  R  R  L  N  F  S  G  F  G  Y  S  111
CCTGCCGCAGCAGCAGCTGCTGGACGAGCATGACGCGGTGAGCGCCGCCTTCCAGGCAGG 960
 L  P  Q  Q  Q  L  L  D  E  H  D  A  V  S  A  A  F  Q  A  G  131
```

# FIG.3C

```
CGTCCTGTCGCCCACCATCTCCCCCAACTACTCCAACGACTTGAACTCCATGGCCGGCTC 1020
 V  L  S  P  T  I  S  P  N  Y  S  N  D  L  N  S  M  A  G  S  151

GCCGGTCTCATCCTACTCGTCGGACGAGGGCTCTTACGACCCGCTCAGCCCCGAGGAGCA 1080
 P  V  S  S  Y  S  S  D  E  G  S  Y  D  P  L  S  P  E  E  Q  171

GGAGCTTCTCGACTTCACCAACTGGTTCTGAGGGGCTCGGCCTGGTCAGGCCCTGGTGCG 1140
 E  L  L  D  F  T  N  W  F  *                                 180

AATGGACTTTGGAAGCAGGGTGATCGCACAACCTGCATCTTTAGTGCTTTCTTGTCAGTG 1200

GCGTTGGGAGGGGGAGAAAAGGAAAAGAAAAAAAAAGAAGAAGAAGAAGAAAAGAGAAGA 1260

AGAAAAAAACGAAAACAGTCAACCAACCCCATCGCCAACTAAGCGAGGCATGCCTGAGAG 1320

ACATGGCTTTCAGAAAACGGGAAGCGCTCAGAACAGTATCTTTGCACTCCAATCATTCAC 1380

GGAGATATGAAGAGCAACTGGGACCTGAGTCAATGCGCAAAATGCAGCTTGTGTGCAAAA 1440
```

# FIG.3D

GCAGTGGGCTCCTGGCAGAAGGGAGCAGCACACGCGTTATAGTAACTCCCATCACCTCTA 1500

ACACGCACAGCTGAAAGTTCTTGCTCGGGTCCCTTCACCTCCCCGCCCTTTCTTAGAGTG 1560

CAGTTCTTAGCCCTCTAGAAACGAGTTGGTGTCTTTCGTCTCAGTAGCCCCCACCCCAAT 1620

AAGCTGTAGACATTGGTTTACAGTGAAACTATGCTATTCTCAGCCCTTTGAAACTCTGCT 1680

TCTCCTCCAGGGCCCGATTCCCAAACCCCATGGCTTCCCTCACACTGTCTTTTCTACCAT 1740

TTTCATTATAGAATGCTTCCAATCTTTTGTGAATTTTTTATTATAAAAAATCTATTTGTA 1800

TCTATCCTAACCAGTTCGGGGATATATTAAGATATTTTTGTACATAAGAGAGAAAGAGAG 1860

AGAAAAATTTATAGAAGTTTTGTACAAATGGTTTAAAATGTGTATATCTTGATACTTTAA 1920

# FIG.3E

CATGTAATGCTATTACCTCTGCATATTTTAGATGTGTAGTTCACCTTACAACTGCAATTT 1980

TCCCTATGTGGTTTTGTAAAGAACTCTCCTCATAGGTGAGATCAAGAGGCCACCAGTTGT 2040

ACTTCAGCACCAATGTGTCTTACTTTATAGAAATGTTGTTAATGTATTAATGATGTTATT 2100

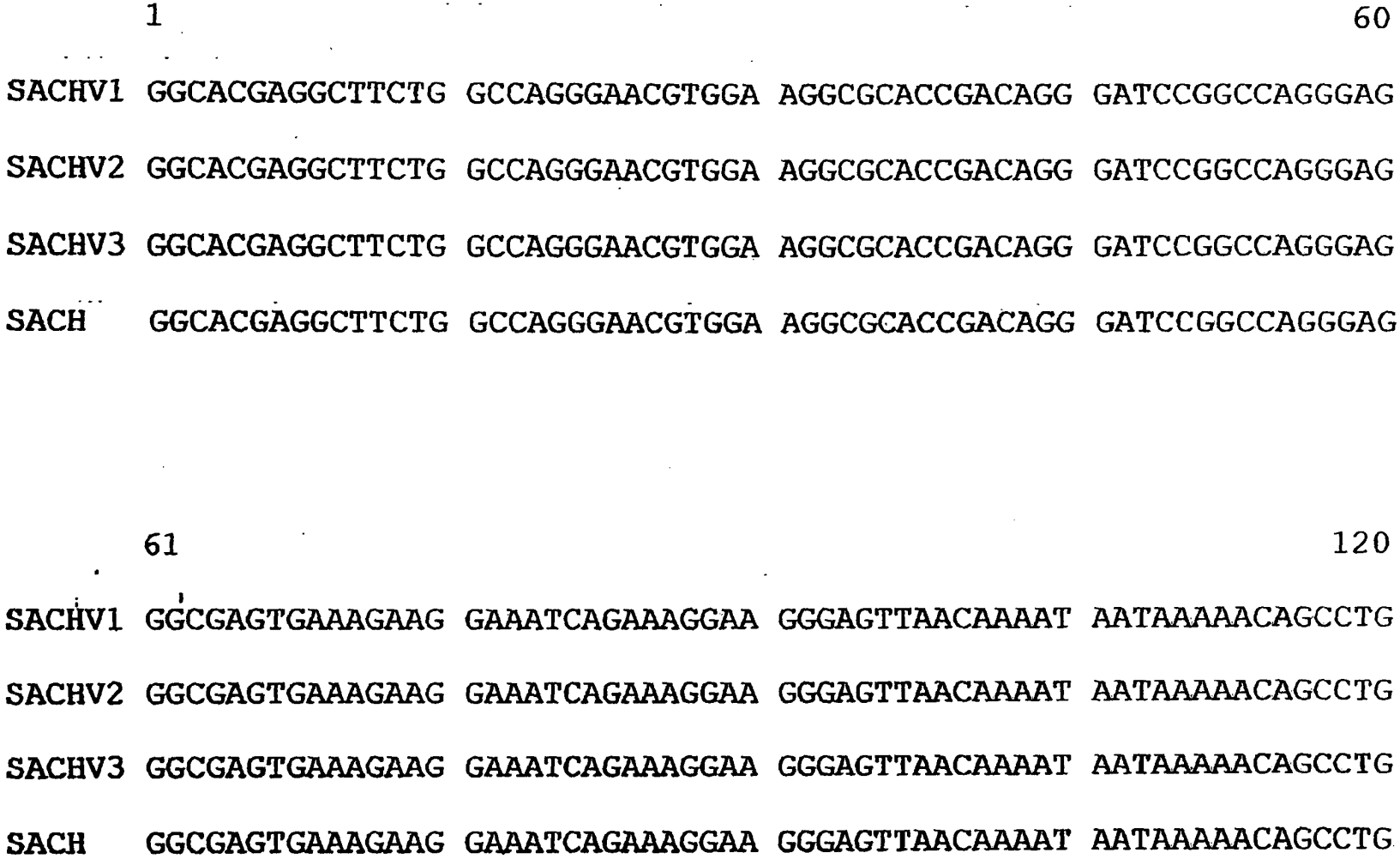
AAATACTGTTCAAGAAGAACAAAGTTTATGCAGCTACTGTCCAAACTCAAAGTGGCAGCC 2160

AGTTGGTTTTGATAGGTTGCCTTTTGGAGATTTCTATTACTGCCTTTTTTTTTCTTACTGT 2220

TTTATTACAAACTTACAAAAATATGTATAACCCTGTTTTATACAAACTAGTTTCGTAATA 2280

AAACTTTTTCCTTTTTTTTAAAATG 2304

# FIG.4A



# FIG.4B

```
        121                                                                 180

SACHV1  AGCCACGGCTGGAGA GACCGAGACCCGGCG CAAGAGAGCGCAGCC TTAGTAGGAGAGGAA

SACHV2  AGCCACGGCTGGAGA GACCGAGACCCGGCG CAAGAGAGCGCAGCC TTAGTAGGAGAGGAA

SACHV3  AGCCACGGCTGGAGA GACCGAGACCCGGCG CAAGAGAGCGCAGCC TTAGTAGGAGAGGAA

SACH    AGCCACGGCTGGAGA GACCGAGACCCGGCG CAAGAGAGCGCAGCC TTAGTAGGAGAGGAA
```

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```
        181                                                                 240

SACHV1  CGCGAGACGCGGCAG CGC---------- ---------------- ----------------

SACHV2  CGCGAGACGCGGCAG AGCGCGTTCAGCACT GACTTTTGCTGCTGC TTCTGCTTTTTTTTT

SACHV3  CGCGAGACGCGGCAG AGCGCGTTCAGCACT GACTTTTGCTGCTGC TTCTGCTTTTTTTTT

SACH    CGCGAGACGCGGCAG AGCGCGTTCAGCACT GACTTTTGCTGCTGC TTCTGCTTTTTTTTT
```

# FIG.4C

```
          241                                                        300
SACHV1    ---------------- ---------------- ---------------- ----------------
SACHV2    TCTTAGAAACAAGAA GGCGCCAGCGGCAGC CTCACACGCGAGCGC CACGCGAGGCTCCCG
SACHV3    TCTTAGAAACAAGAA GGCGCCAGCGGCAGC CTCACACGCGAGCGC CACGCGAGGCTCCCG
SACH      TCTTAGAAACAAGAA GGCGCCAGCGGCAGC CTCACACGCGAGCGC CACGCGAGGCTCCCG

          301                                                        360
SACHV1    ---------------- ---------------- ---------------- ----------------
SACHV2    AAGCCAACCCGCGAA GGGAGGAGGGGAGGG AGGAGGAGGCGGCGT GCAGGGAGGAGAAAA
SACHV3    AAGCCAACCCGCGAA GGGAGGAGGGGAGGG AGGAGGAGGCGGCGT GCAGGGAGGAGAAAA
SACH      AAGCCAACCCGCGAA GGGAGGAGGGGAGGG AGGAGGAGGCGGCGT GCAGGGAGGAGAAAA
```

# FIG.4D

```
          361                                                   420
SACHV1    ---------------- ---------------- ---------------- ----------------
SACHV2    AGCATTTTCACTTTT TTTGCTCCCACTCTA AGAAGTCTCCCGGGG ATTTTGTATATATTT
SACHV3    AGCATTTTCACTTTT TTTGCTCCCACTCTA AGAAGTCTCCCGGGG ATTTTGTATATATTT
SACH      AGCATTTTCACTTTT TTTGCTCCCACTCTA AGAAGTCTCCCGGGG ATTTTGTATATATTT

          421                                                   480
SACHV1    ---------------- ---------------- ---------------- ----------------
SACHV2    TTTAACTTCCGTCAG GGCTCCCGCTTCATA TTTCCTTTTCTTTCC CTCTCTGTTCCTGCA
SACHV3    TTTAACTTCCGTCAG GGCTCCCGCTTCATA TTTCCTTTTCTTTCC CTCTCTGTTCCTGCA
SACH      TTTAACTTCCGTCAG GGCTCCCGCTTCATA TTTCCTTTTCTTTCC CTCTCTGTTCCTGCA
```

# FIG.4E

```
          481                                                    540
SACHV1    ---------------- ---------------- ---------------- ----------------
SACHV2    CCCAAGTT-------- ---------------- ---------------- ----------------
SACHV3    CCCAAGTTCTCTCTG TGTCCCCCTCGCGGG CCCCGCACCTCGCGT CCCGGATCGCTCTGA
SACH      CCCAAGTTCTCTCTG TGTCCCCCTCGCGGG CCCCGCACCTCGCGT CCCGGATCGCTCTGA

          541                                                    600
SACHV1    ---------------- ---------------- ---------------- ----------------
SACHV2    ---------------- ---------------- ---------------- ----------------
SACHV3    TTCCGCGACTCCTTG GCCGCCGCTGCGCAT GGAAAGCTCTGCCAA GATGGAGAGCGGCGG
SACH      TTCCGCGACTCCTTG GCCGCCGCTGCGCAT GGAAAGCTCTGCCAA GATGGAGAGCGGCGG
```

# FIG.4F

```
          601                                                        660
SACHV1    ---------- ---------- ---------- ----------
SACHV2    ---------- ---------- ---------- ----------
SACHV3    CGCCGGCCAGCAGCC CCAGCCGCAGCCCCA GCAGCCCTTCCTGCC GCCCGCAGCCTGTTT
SACH      CGCCGGCCAGCAGCC CCAGCCGCAGCCCCA GCAGCCCTTCCTGCC GCCCGCAGCCTGTTT

          661                                                        720
SACHV1    ---------- ---------- ---------- -----AGAGCGCGCA
SACHV2    ---------- ---------- ---------- ----------
SACHV3    CTTTGCCACGGCCGC AGCCGCGGCGGCCGC AGCCGCCGCAGCGGC AGCGCAGAGCGCGCA
SACH      CTTTGCCACGGCCGC AGCCGCGGCGGCCGC AGCCGCCGCAGCGGC AGCGCAGAGCGCGCA
```

# FIG.4G

```
          721                                                        780
SACHV1 GCAGCAGCAGCAGCA GCAGCAGCAGCAGCA GCAGGCGCCGCAGCT GAGACCGGCGGCCGA
SACHV2 --------------- --------------- --------------- ---------------
SACHV3 GCAGCAGCAGCAGCA GCAGCAGCAGCAGCA GCAGGCGCCGCAGCT GAGACCGGCGGCCGA
SACH   GCAGCAGCAGCAGCA GCAGCAGCAGCAGCA GCAGGCGCCGCAGCT GAGACCGGCGGCCGA

          781                                                        840
SACHV1 CGGCCAGCCCTCAGG GGGCGGTCACAAGTC AGCGCCCAAGCAAGT CAAGCGACAGCGCTC
SACHV2 --------------- --------------- --------------- ---------------
SACHV3 CGGCCAGCCCTCAGG GGGCGGTCACAAGTC AGCGCCCAAGCAAGT CAAGCGACAGCGCTC
SACH   CGGCCAGCCCTCAGG GGGCGGTCACAAGTC AGCGCCCAAGCAAGT CAAGCGACAGCGCTC
```

# FIG.4H

```
          841                                                        900
SACHV1 GTCTTCGCCCGAACT GATGCGCTGCAAACG CCGGCTCAACTTCAG CGGCTTTGGCTACAG
SACHV2 --------------- --------------- --------------- ---------------
SACHV3 GTCTTCGCCCGAACT GATGCGCTGCAAACG CCGGCTCAACTTCAG CGGCTTTGGCTACAG
SACH   GTCTTCGCCCGAACT GATGCGCTGCAAACG CCGGCTCAACTTCAG CGGCTTTGGCTACAG

          901                                                        960
SACHV1 CCTGCCGCAGCAGCA GCCGGCCGCCGTGGC GCGCCGCAACGAGCG CGAGCGCAACCGCGT
SACHV2 --------------- --------------- --------------- ---------------
SACHV3 CCTGCCGCAGCAGCA GC------------- --------------- ---------------
SACH   CCTGCCGCAGCAGCA GCCGGCCGCCGTGGC GCGCCGCAACGAGCG CGAGCGCAACCGCGT
```

# FIG.4I

961 1020

SACHV1 CAAGTTGGTCAACCT GGGCTTTGCCACCCT TCGGGAGCACGTCCC CAACGGCGCGGCCAA

SACHV2 ------GGTCAACCT GGGCTTTGCCACCCT TCGGGAGCACGTCCC CAACGGCGCGGCCAA

SACHV3 --------------- --------------- --------------- ---------------

SACH CAAGTTGGTCAACCT GGGCTTTGCCACCCT TCGGGAGCACGTCCC CAACGGCGCGGCCAA

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1021 1080

SACHV1 CAAGAAGATGAGTAA GGTGGAGACACTGCG CTCGGCGGTCGAGTA CATCCGCGCGCTGCA

SACHV2 CAAGAAGATGAGTAA GGTGGAGACACTGCG CTCGGCGGTCGAGTA CATCCGCGCGCTGCA

SACHV3 --------------- --------------- --------------- ---------------

SACH CAAGAAGATGAGTAA GGTGGAGACACTGCG CTCGGCGGTCGAGTA CATCCGCGCGCTGCA

# FIG.4J

```
          1081                                                    1140

SACHV1 GCAGCTGCTGGACGA GCATGACGCGGTGAG CGCCGCCTTCCAGGC AGGCGTCCTGTCGCC
SACHV2 GCAGCTGCTGGACGA GCATGACGCGGTGAG CGCCGCCTTCCAGGC AGGCGTCCTGTCGCC
SACHV3 -----TGCTGGACGA GCATGACGCGGTGAG CGCCGCCTTCCAGGC AGGCGTCCTGTCGCC
SACH   GCAGCTGCTGGACGA GCATGACGCGGTGAG CGCCGCCTTCCAGGC AGGCGTCCTGTCGCC

          1141                                                    1200

SACHV1 CACCATCTCCCCCAA CTACTCCAACGACTT GAACTCCATGGCCGG CTCGCCGGTCTCATC
SACHV2 CACCATCTCCCCCAA CTACTCCAACGACTT GAACTCCATGGCCGG CTCGCCGGTCTCATC
SACHV3 CACCATCTCCCCCAA CTACTCCAACGACTT GAACTCCATGGCCGG CTCGCCGGTCTCATC
SACH   CACCATCTCCCCCAA CTACTCCAACGACTT GAACTCCATGGCCGG CTCGCCGGTCTCATC
```

# FIG.4K

```
        1201                                                        1260
SACHV1  CTACTCGTCGGACGA GGGCTCTTACGACCC GCTCAGCCCCGAGGA GCAGGAGCTTCTCGA
SACHV2  CTACTCGTCGGACGA GGGCTCTTACGACCC GCTCAGCCCCGAGGA GCAGGAGCTTCTCGA
SACHV3  CTACTCGTCGGACGA GGGCTCTTACGACCC GCTCAGCCCCGAGGA GCAGGAGCTTCTCGA
SACH    CTACTCGTCGGACGA GGGCTCTTACGACCC GCTCAGCCCCGAGGA GCAGGAGCTTCTCGA
```

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```
        1261                                                        1320
SACHV1  CTTCACCAACTGGTT CTGAGGGGCTCGGCC TGGTCAGGCCCTGGT GCGAATGGACTTTGG
SACHV2  CTTCACCAACTGGTT CTGAGGGGCTCGGCC TGGTCAGGCCCTGGT GCGAATGGACTTTGG
SACHV3  CTTCACCAACTGGTT CTGAGGGGCTCGGCC TGGTCAGGCCCTGGT GCGAATGGACTTTGG
SACH    CTTCACCAACTGGTT CTGAGGGGCTCGGCC TGGTCAGGCCCTGGT GCGAATGGACTTTGG
```

# FIG.4L

1321 1380

SACHV1 AAGCAGGGTGATCGC ACAACCTGCATCTTT AGTGCTTTCTTGTCA GTGGCGTTGGGAGGG

SACHV2 AAGCAGGGTGATCGC ACAACCTGCATCTTT AGTGCTTTCTTGTCA GTGGCGTTGGGAGGG

SACHV3 AAGCAGGGTGATCGC ACAACCTGCATCTTT AGTGCTTTCTTGTCA GTGGCGTTGGGAGGG

SACH AAGCAGGGTGATCGC ACAACCTGCATCTTT AGTGCTTTCTTGTCA GTGGCGTTGGGAGGG



1381 1440

SACHV1 GGAGAAAAGGAAAAG AAAAAAAAAGAAGAA GAAGAAGAAAAGAGA AGAAGAAAAAAACGA

SACHV2 GGAGAAAAGGAAAAG AAAAAAAAAGAAGAA GAAGAAGAAAAGAGA AGAAGAAAAAAACGA

SACHV3 GGAGAAAAGGAAAAG AAAAAAAAAGAAGAA GAAGAAGAAAAGAGA AGAAGAAAAAAACGA

SACH GGAGAAAAGGAAAAG AAAAAAAAAGAAGAA GAAGAAGAAAAGAGA AGAAGAAAAAAACGA

# FIG.4M

1441 1500

SACHV1 AAACAGTCAACCAAC CCCATCGCCAACTAA GCGAGGCATGCCTGA GAGACATGGCTTTCA

SACHV2 AAACAGTCAACCAAC CCCATCGCCAACTAA GCGAGGCATGCCTGA GAGACATGGCTTTCA

SACHV3 AAACAGTCAACCAAC CCCATCGCCAACTAA GCGAGGCATGCCTGA GAGACATGGCTTTCA

SACH AAACAGTCAACCAAC CCCATCGCCAACTAA GCGAGGCATGCCTGA GAGACATGGCTTTCA



1501 1560

SACHV1 GAAAACGGGAAGCGC TCAGAACAGTATCTT TGCACTCCAATCATT CACGGAGATATGAAG

SACHV2 GAAAACGGGAAGCGC TCAGAACAGTATCTT TGCACTCCAATCATT CACGGAGATATGAAG

SACHV3 GAAAACGGGAAGCGC TCAGAACAGTATCTT TGCACTCCAATCATT CACGGAGATATGAAG

SACH GAAAACGGGAAGCGC TCAGAACAGTATCTT TGCACTCCAATCATT CACGGAGATATGAAG

# FIG.4N

1561 1620

SACHV1 AGCAACTGGGACCTG AGTCAATGCGCAAAA TGCAGCTTGTGTGCA AAAGCAGTGGGCTCC

SACHV2 AGCAACTGGGACCTG AGTCAATGCGCAAAA TGCAGCTTGTGTGCA AAAGCAGTGGGCTCC

SACHV3 AGCAACTGGGACCTG AGTCAATGCGCAAAA TGCAGCTTGTGTGCA AAAGCAGTGGGCTCC

SACH AGCAACTGGGACCTG AGTCAATGCGCAAAA TGCAGCTTGTGTGCA AAAGCAGTGGGCTCC



1621 1680

SACHV1 TGGCAGAAGGGAGCA GCACACGCGTTATAG TAACTCCCATCACCT CTAACACGCACAGCT

SACHV2 TGGCAGAAGGGAGCA GCACACGCGTTATAG TAACTCCCATCACCT CTAACACGCACAGCT

SACHV3 TGGCAGAAGGGAGCA GCACACGCGTTATAG TAACTCCCATCACCT CTAACACGCACAGCT

SACH TGGCAGAAGGGAGCA GCACACGCGTTATAG TAACTCCCATCACCT CTAACACGCACAGCT

# FIG.4O

1681 1740

SACHV1 GAAAGTTCTTGCTCG GGTCCCTTCACCTCC CCGCCCTTTCTTAGA GTGCAGTTCTTAGCC

SACHV2 GAAAGTTCTTGCTCG GGTCCCTTCACCTCC CCGCCCTTTCTTAGA GTGCAGTTCTTAGCC

SACHV3 GAAAGTTCTTGCTCG GGTCCCTTCACCTCC CCGCCCTTTCTTAGA GTGCAGTTCTTAGCC

SACH GAAAGTTCTTGCTCG GGTCCCTTCACCTCC CCGCCCTTTCTTAGA GTGCAGTTCTTAGCC



1741 1800

SACHV1 CTCTAGAAACGAGTT GGTGTCTTTCGTCTC AGTAGCCCCCACCCC AATAAGCTGTAGACA

SACHV2 CTCTAGAAACGAGTT GGTGTCTTTCGTCTC AGTAGCCCCCACCCC AATAAGCTGTAGACA

SACHV3 CTCTAGAAACGAGTT GGTGTCTTTCGTCTC AGTAGCCCCCACCCC AATAAGCTGTAGACA

SACH CTCTAGAAACGAGTT GGTGTCTTTCGTCTC AGTAGCCCCCACCCC AATAAGCTGTAGACA

# FIG.4P

1801 1860

SACHV1 TTGGTTTACAGTGAA ACTATGCTATTCTCA GCCCTTTGAAACTCT GCTTCTCCTCCAGGG

SACHV2 TTGGTTTACAGTGAA ACTATGCTATTCTCA GCCCTTTGAAACTCT GCTTCTCCTCCAGGG

SACHV3 TTGGTTTACAGTGAA ACTATGCTATTCTCA GCCCTTTGAAACTCT GCTTCTCCTCCAGGG

SACH TTGGTTTACAGTGAA ACTATGCTATTCTCA GCCCTTTGAAACTCT GCTTCTCCTCCAGGG

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1861 1920

SACHV1 CCCGATTCCCAAACC CCATGGCTTCCCTCA CACTGTCTTTTCTAC CATTTTCATTATAGA

SACHV2 CCCGATTCCCAAACC CCATGGCTTCCCTCA CACTGTCTTTTCTAC CATTTTCATTATAGA

SACHV3 CCCGATTCCCAAACC CCATGGCTTCCCTCA CACTGTCTTTTCTAC CATTTTCATTATAGA

SACH CCCGATTCCCAAACC CCATGGCTTCCCTCA CACTGTCTTTTCTAC CATTTTCATTATAGA

# FIG.4Q

1921 1980

SACHV1 ATGCTTCCAATCTTT TGTGAATTTTTTATT ATAAAAAATCTATTT GTATCTATCCTAACC

SACHV2 ATGCTTCCAATCTTT TGTGAATTTTTTATT ATAAAAAATCTATTT GTATCTATCCTAACC

SACHV3 ATGCTTCCAATCTTT TGTGAATTTTTTATT ATAAAAAATCTATTT GTATCTATCCTAACC

SACH ATGCTTCCAATCTTT TGTGAATTTTTTATT ATAAAAAATCTATTT GTATCTATCCTAACC

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1981 2040

SACHV1 AGTTCGGGGATATAT TAAGATATTTTTGTA CATAAGAGAGAAAGA GAGAGAAAAATTTAT

SACHV2 AGTTCGGGGATATAT TAAGATATTTTTGTA CATAAGAGAGAAAGA GAGAGAAAAATTTAT

SACHV3 AGTTCGGGGATATAT TAAGATATTTTTGTA CATAAGAGAGAAAGA GAGAGAAAAATTTAT

SACH AGTTCGGGGATATAT TAAGATATTTTTGTA CATAAGAGAGAAAGA GAGAGAAAAATTTAT

# FIG.4R

2041 2100

SACHV1 AGAAGTTTTGTACAA ATGGTTTAAAATGTG TATATCTTGATACTT TAACATGTAATGCTA

SACHV2 AGAAGTTTTGTACAA ATGGTTTAAAATGTG TATATCTTGATACTT TAACATGTAATGCTA

SACHV3 AGAAGTTTTGTACAA ATGGTTTAAAATGTG TATATCTTGATACTT TAACATGTAATGCTA

SACH AGAAGTTTTGTACAA ATGGTTTAAAATGTG TATATCTTGATACTT TAACATGTAATGCTA

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2101 2160

SACHV1 TTACCTCTGCATATT TTAGATGTGTAGTTC ACCTTACAACTGCAA TTTTCCCTATGTGGT

SACHV2 TTACCTCTGCATATT TTAGATGTGTAGTTC ACCTTACAACTGCAA TTTTCCCTATGTGGT

SACHV3 TTACCTCTGCATATT TTAGATGTGTAGTTC ACCTTACAACTGCAA TTTTCCCTATGTGGT

SACH TTACCTCTGCATATT TTAGATGTGTAGTTC ACCTTACAACTGCAA TTTTCCCTATGTGGT

# FIG.4S

```
          2161                                                2220
SACHV1 TTTGTAAAGAACTCT CCTCATAGGTGAGAT CAAGAGGCCACCAGT TGTACTTCAGCACCA
SACHV2 TTTGTAAAGAACTCT CCTCATAGGTGAGAT CAAGAGGCCACCAGT TGTACTTCAGCACCA
SACHV3 TTTGTAAAGAACTCT CCTCATAGGTGAGAT CAAGAGGCCACCAGT TGTACTTCAGCACCA
SACH   TTTGTAAAGAACTCT CCTCATAGGTGAGAT CAAGAGGCCACCAGT TGTACTTCAGCACCA

          2221                                                2280
SACHV1 ATGTGTCTTACTTTA TAGAAATGTTGTTAA TGTATTAATGATGTT ATTAAATACTGTTCA
SACHV2 ATGTGTCTTACTTTA TAGAAATGTTGTTAA TGTATTAATGATGTT ATTAAATACTGTTCA
SACHV3 ATGTGTCTTACTTTA TAGAAATGTTGTTAA TGTATTAATGATGTT ATTAAATACTGTTCA
SACH   ATGTGTCTTACTTTA TAGAAATGTTGTTAA TGTATTAATGATGTT ATTAAATACTGTTCA
```

# FIG.4T

2281 2340

SACHV1 AGAAGAACAAAGTTT ATGCAGCTACTGTCC AAACTCAAAGTGGCA GCCAGTTGGTTTTGA

SACHV2 AGAAGAACAAAGTTT ATGCAGCTACTGTCC AAACTCAAAGTGGCA GCCAGTTGGTTTTGA

SACHV3 AGAAGAACAAAGTTT ATGCAGCTACTGTCC AAACTCAAAGTGGCA GCCAGTTGGTTTTGA

SACH AGAAGAACAAAGTTT ATGCAGCTACTGTCC AAACTCAAAGTGGCA GCCAGTTGGTTTTGA

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2341 2400

SACHV1 TAGGTTGCCTTTTGG AGATTTCTATTACTG CCTTTTTTTTCTTAC TGTTTTATTACAAAC

SACHV2 TAGGTTGCCTTTTGG AGATTTCTATTACTG CCTTTTTTTTCTTAC TGTTTTATTACAAAC

SACHV3 TAGGTTGCCTTTTGG AGATTTCTATTACTG CCTTTTTTTTCTTAC TGTTTTATTACAAAC

SACH TAGGTTGCCTTTTGG AGATTTCTATTACTG CCTTTTTTTTCTTAC TGTTTTATTACAAAC

# FIG.4U

2401 2460

SACHV1 TTACAAAAATATGTA TAACCCTGTTTTATA CAAACTAGTTTCGTA ATAAAACTTTTTCCT

SACHV2 TTACAAAAATATGTA TAACCCTGTTTTATA CAAACTAGTTTCGTA ATAAAACTTTTTCCT

SACHV3 TTACAAAAATATGTA TAACCCTGTTTTATA CAAACTAGTTTCGTA ATAAAACTTTTTCCT

SACH TTACAAAAATATGTA TAACCCTGTTTTATA CAAACTAGTTTCGTA ATAAAACTTTTTCCT

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2461

SACHV1 TTTTTTAAAATG 1960

SACHV2 TTTTTTAAAATG 1994

SACHV3 TTTTTTAAAATG 2304

SACH TTTTTTAAAATG 2472

# FIG.5A

```
          1                                                          60
SACHV1    ---------------- ---------------- ---------------- ----------------
SACHV2    ---------------- ---------------- ---------------- ----------------
SACHV3    MESSAKMESGGAGQQ PQPQPQQPFLPPAAC FFATAAAAAAAAAAA AAQSAQQQQQQQQQQ
SACHV     MESSAKMESGGAGQQ PQPQPQQPFLPPAAC FFATAAAAAAAAAAA AAQSAQQQQQQQQQQ

          61                                                        120
SACHV1    ---------------- ---------------- ------MRCKRRLNF SGFGYSLPQQQPAAV
SACHV2    ---------------- ---------------- ---------------- ----------------
SACHV3    QQAPQLRPAADGQPS GGGHKSAPKQVKRQR SSSPELMRCKRRLNF SGFGYSLPQQQ----
SACHV     QQAPQLRPAADGQPS GGGHKSAPKQVKRQR SSSPELMRCKRRLNF SGFGYSLPQQQPAAV
```

# FIG.5B

```
          121                                                                180
SACHV1    ARRNERERNRVKLVN LGFATLREHVPNGAA NKKMSKVETLRSAVE YIRALQQLLDEHDAV
SACHV2    ---------------- ---------------- ---MSKVETLRSAVE YIRALQQLLDEHDAV
SACHV3    ---------------- ---------------- ---------------- -------LLDEHDAV
SACHV     ARRNERERNRVKLVN LGFATLREHVPNGAA NKKMSKVETLRSAVE YIRALQQLLDEHDAV

          181
SACHV1    SAAFQAGVLSPTISP NYSNDLNSMAGSPVS SYSSDEGSYDPLSPE EQELLDFTNWF  140
SACHV2    SAAFQAGVLSPTISP NYSNDLNSMAGSPVS SYSSDEGSYDPLSPE EQELLDFTNWF  83
SACHV3    SAAFQAGVLSPTISP NYSNDLNSMAGSPVS SYSSDEGSYDPLSPE EQELLDFTNWF  180
SACHV     SAAFQAGVLSPTISP NYSNDLNSMAGSPVS SYSSDEGSYDPLSPE EQELLDFTNWF  236
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